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IS 6671 (1987): germination paper [CHD 15: Paper and its products]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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***Indian Standard***  
SPECIFICATION FOR  
GERMINATION PAPER  
***( First Revision )***

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## SPECIFICATION FOR GERMINATION PAPER

### ( First Revision )

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# *Indian Standard*

## SPECIFICATION FOR GERMINATION PAPER

### ( *First Revision* )

## 0. FOREWORD

**0.1** This Indian Standard ( First Revision ) was adopted by the Bureau of Indian Standards on 17 August 1987, after the draft finalized the Seed Processing and Technology Sectional Committee had been approved by the Agricultural and Food Products Division Council.

**0.2** Seed industry has made rapid advances in the country since the early 1960's. With the promulgation of Seeds Act 1966, it has become compulsory to attach truthful labels to each container of notified seed indicating the quality of seed being sold. It also provides for voluntary seed certification which requires seed to be tested before issuing the certificate. Increased emphasis is being placed on seed quality and correct labelling of all the seeds. To achieve the above, seed testing plays an indispensable role. The germination test forms a very important criteria for determining the quality of seed. For this test suitable substrata is required to be used to obtain accurate and reproducible results.

**0.3** Paper forms one of the important substrata used in the germination test. In order to get reproducible results repeatedly, it is essential that the germination paper is of the desired quality. This standard covering the requirements for germination paper to be used for germination tests was prepared with a view to encourage production of the right quality of paper in the country. Based on the experience of implementation of the standard and to align with the requirements stipulated by International Seed Testing Association, a need was felt to revise the standard.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained

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\*Rules for rounding off numerical values ( revised ).

in the rounded off value should be the same as that of the specified value in this standard.

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## 1. SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for germination paper.

## 2. REQUIREMENTS

### 2.1 General

**2.1.1 Formation** — The paper should have an open, porous formation and be free from defects or impurities that may affect its performance in service.

**2.1.2 Cleanliness** -The paper should be free of fungi or bacteria which might interfere with the growth or evaluation of germinating seedlings.

**2.1.3 Treatment** — The paper should not be treated for the elimination of mould as this process might deposit chemicals in the paper which would suppress or kill disease organisms on the seeds.

**2.1.4 Pernicious Materials** -The paper shall not contain any impurities and toxic substances in such quantity as to cause injury to the roots of germinating seedlings when tested in accordance with the method prescribed in Appendix A.

**2.1.5 Composition** -The paper shall be prepared from bleached chemical, wood, cotton or other purified vegetable cellulose.

**2.1.6 Colour** — The paper may be white or coloured with a dye non-toxic to germinating seedlings.

**2.1.7 Texture** — The texture of the paper should be such that the roots of germinating seedlings will grow on and not into the paper. A creped surface may be formed for filter and towel papers.

**2.1.8 Thickness When Wet** — The total thickness of the paper when wet shall be not less than 2 mm.

**2.2 Physical Requirements** -The papers when measured at 50 percent relative humidity, shall meet the requirements as given in Table 1.

NOTE -When paper is measured at 65 percent relative humidity rather than 50 percent relative humidity, the basis mass is about 30 percent higher and the bursting strength is about 10 percent lower.



TABLE 1 REQUIREMENTS OF GERMINATION PAPERS

( Clause 2.2 )

TYPE OF PAPER	CLASS OF PAPER	BASIS* MASS g/m <sup>2</sup>	BURSTING STRENGTH, Min kN/m <sup>2</sup>	CAPILLARY RISE, Min mm	ACIDITY pH	ASH, Max PERCENT
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Blotter	Light	270	180	30	6.0 to 7.5	1.0
	Medium	405	220	30	6.0 to 7.5	1.0
	Heavy	730	320	30	6.0 to 7.5	1.0
Filter	Light	85	90	30	6.0 to 7.5	1.0
	Medium	132	100	30	6.0 to 7.5	1.0
	Heavy	170	120	30	6.0 to 7.5	1.0
Towel	Light	65	270	52	6.4 to 6.7	0.6
	Medium	128	470	58	6.4 to 6.7	0.6
	Heavy	135	100	32	6.4 to 6.7	0.6

\*Tolerance on basis mass of blotters is  $\pm 5$  percent, and for filter and towel  $\pm 10$  percent.

### 3. PACKING AND MARKING

**3.1 500 or 250 sheets**, each measuring **455 x 275 mm** with tolerance  $\pm 2$  mm on both dimensions may be wrapped in kraft paper and sealed with gummed paper tape or suitably packed as agreed to between the purchaser and the vendor.

**3.2** Each package shall be marked' with the following information:

- Description of the paper (towel or blotter or filter ),
- Class of paper ( light, medium and heavy ),
- Plain or crepe,
- Contents of the package ( number of sheets ),
- Size in millimetres, and
- Lot number.

**3.2.1** The packages may also be marked with the Standard Mark.

**NOTE** — The use of the Standard Mark is governed by the provisions of the bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

## **4. SAMPLING**

**4.1** Representative samples for tests shall be drawn as prescribed in 3 of IS : 1060 (Part 1 )-1966\*.

## **5. TESTS**

**5.1** Test for toxic material shall be conducted in accordance with the method given in Appendix A.

**5.2** Test for basis mass shall be conducted in accordance with 6 of IS : 1060 (Part 1 )-1966\*.

**NOTE** -The basis mass of crepe paper shall be taken on the basic material, that is, before creping, is done.

**5.3** Bursting strength shall be conducted in accordance with 12.5 of IS : 1060 (Part 1 )-1966\*.

**5.4** The capillary rise shall be conducted in accordance with the method given in Appendix B.

**5.5** Acidity and ash content shall be determined in accordance with **10** and **11** of IS : 1060 (Part 1 )-1966\* respectively.

# **A P P E N D I X   A**

## **( Clauses 2.1.4 and 5.1 )**

### **BIOLOGICAL TEST FOR TOXIC MATERIALS**

#### **A-1. PROCEDURE**

**A-1.1** In this test, comparison is made between germination papers of unknown quality and known acceptable quality. Pieces of paper are

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\*Methods of sampling and test for paper and allied products, Part 1 ( revised ).

cut to size and placed in petri dishes or boxes. Use two thicknesses of the papers for each container. Moisten the papers with tap water, using only enough water to saturate the papers ( no excess to pour off ). The roots of seeds known to be sensitive to toxic paper used in test are seeds of onion or Brassica sp.

A-1.2 Evaluate by comparing the development of the seedlings grown on unknown quality of paper and those grown on the 'check'. The evaluation of onions seedlings shall be made after 6 days and of **Brassica** seedlings after 3 days.

A-1.3 Symptoms of root inhibition due to toxic paper are root tips shortened and sometimes discoloured, root hairs 'bunched', and sometimes plumules shortened.

## **A P P E N D I X   B**

*( Clause 5.4 )*

### **DETERMINATION OF CAPILLARY RISE**

#### **B-1. PROCEDURE**

**B-1.1** Cut from strips of paper each 10 mm wide, two in the machine direction of the paper and two in the cross-machine directions. Immerse each strip in distilled or de-ionized water to a depth of 20 mm at the end of the strip. At the end of two minutes, measure the height to which the water has risen in the strip, to the nearest 1 mm.

B-1.2 **Report-** Compute the average for the two strips cut in the machine direction, and the average for the two strips cut in the cross-machine direction. The lower of these two averages shall be taken as the result for the test.

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